EFFECTIVE IN-HOUSE VOTING AND VERIFICATION USING BLOCK CHAIN IMPLEMENTATION

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Received 05 April 2019 Received in revised form 08 April 2019 Accepted 10 April 2019
Available online 15 April 2019

Abstract—In the EXISTING SYSTEM, Ballot based Voting is present, but still there is no system to avoid Proxy Casting and Recasting is implemented. We do not have an option to see our casted Vote also. There is no security in this current application. In the PROPOSED SYSTEM, a novel electronic voting system based on Blockchain that addresses some of the limitations in existing systems and evaluates some of the popular blockchain frameworks for the purpose of constructing a blockchain-based e-voting system. In the MODIFICATION part of the project, we integrate Aadhaar card linked mobile number for OTP generation, only then the voter can cast the vote, this system prevents casting and re-casting of proxies.

I. INTRODUCTION

Electronic voting systems have been the subject of active research for decades with the aim of minimizing the cost of running an election while ensuring the integrity of the election by complying with the requirements of security, privacy and compliance[1]. Replacing the traditional pen and paper scheme with a new electoral system can reduce fraud while traceability and verification of the voting process. Blockchain is a public ledger distributed, unchanging, uncontrovertible. This new technology has three main characteristics:

(I) Immutability: any proposed "new block "in the ledger must refer to the previous version of the ledger. This creates an immutable chain from which the blockchain takes its name and prevents it from altering the integrity of the previous entries.

(II) Verification: the ledger is decentralized, replicated and distributed across multiple sites. This ensures high availability (by eliminating a single failure point) and gives third-party verification, as all nodes maintain the consensus version of the ledger.

(III) Distributed Consensus: a consensus protocol distributed to determine who will be able to add the next new transaction to the ledger. A majority of the network nodes must reach a consensus before new proposed entry block becomes a permanent part of the book.

II. Methodology

BLOCKCHAIN as the E-voting service

This segment declares a radically new electronic voting system based on the polling requirements and blockchain as a service. We demonstrate how the blockchain is set up, describe the smart e-voting contract that will be employed on the blockchain and show how the proposed system meets the expected voting requirements.

1.Block Chain Setup

In our work, we actually set up a blockchain of Go-Ethereum authorized to prove authority (POA) to accomplish this goal.

(i)District node: represent each electoral district. Each district module has a software undercover agent that interacts autonomously with the "bootnode "and manages the life cycle of the intelligent current contract on that node. When an election is created by the election administrator (see the intelligent contract section), a ballot smart contract is distributed and deployed to its respective district node.

(ii)**Bootnode:** A bootnode is a discovery and coordination service that helps to discover and communicate the district nodes. The bootnode has no blockchain status and is run on a static IP so that district modules find their peers quicker. After settingup a secure, private blockchain, the next step is to define and implement a smart contract that represents the e-voting process on the blockchain infrastructure.

Block Chain Implementation

In order to meet the online privacy, security and transparency requirements for e-voting and to ensure that the electoral system does not enable forced voting, we use a private (permitted) blockchain to set up our blockchain infrastructure where smart contracts are deployed. We recognize three blockchain methodologies in this subsection for the implementation and subsequent deployment of our intelligent election contracts.

Geth: Go-Ethereum or Geth is one of three original Ethereum security protocol implementations. It runs intelligent contract programs exactly as planned without the possibility of downtime, censorship, fraud or interference by third parties. This framework promotes development outside the Geth protocol and is the most developer-friendly framework for those we have examined. The rate of transaction depends on the implementation of the blockchain as a public or private network.

Solidity: This example of solidity will generate an intelligent voting contract. The ultimate goal is to automatically and transparently count votes. The script's very idea is that a contract is created for each ballot and each alternative has a short name. The contract creator separately grants voting rights to all polling addresses. People who have the addresses can also choose to vote or delegate their vote to another person they choose. Finally, a function is executed to determine which proposal has the most votes and to return the results.

Ethereum: Ethereum is a decentralized platform that runs intelligent contracts: Applications that run exactly as programmed without the possibility of downtime, censorship, fraud or interference from third parties. This allows developers to create markets, store debt registers or promises, move funds according to long-standing instructions (such as a testament or a futures contract) and many other things.

III. Working Procedure

Election as a smart contract

(i)Election Administrator: Manage the lifecycle of an election. In this role, multiple trusted institutions and companies may be registered. Election managers create the election, register voters, decide the election life and assign authorized nodes.

ii) Voter: An eligible person to vote. Voters can authenticate themselves by using their card number,load ballots, cast their votes and verify their votes after the election has ended.

Election Process

Election creation: Election managers create election ballots using an intelligent contract in which the manager defines a list of candidates for each electoral district.The intelligent contracts are then written on the blockchain, where district nodes have access to their respective intelligent contracts.

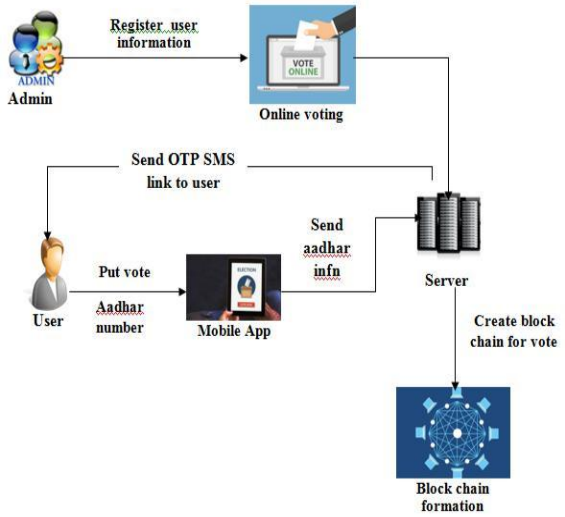
Registration of the voters: The registration phase shall be carried out by the electoral administrators. When an election is made, the election administrators must define a list of eligible voters deterministic. Each voter should use his or her Aadhar card number in the registration process to be a authenticated user and receive an otp to be registered as an electorate.

Casting Their Vote: Each electorate interacts with an intelligent ballot contract for their electoral district. This intelligent contract interacts with the blockchain via the concomitant district node, which attaches the blockchain to the vote. Each For verification purposes, individual voters obtain the transaction ID for their vote. Each vote agreed by the huge majority of the corresponding district nodes is recorded as a transaction and then annexed to the blockchain. It's a visualization of this process. The transaction in our proposed system contains information about the transaction ID,the block on which the transaction is located,the smart contract to which the transaction was sent-which implies the voting district from which the vote was cast, and the importance of the transaction, i.e. the vote, clearly indicating which entity (party) voted for.

Verification: The confirmation link will be sent to the elector to verify whether or not the vote was cast.

Polling results: The election is tested on the fly in intelligent contracts. Every smart ballot contract has its own tally for its corresponding destination in its own storage space. The outcome will be

published by online voting application on the day of the election itself.



LITERATURE SURVEY

There are different methods of electronic voting system by using block chain.

Xiangdong Li [1]: Hardware and software system framework using RFID technology. Secure procedure for electronic voting in a poll and precinct setting. Compared to "ballot "on direct recording equipment (DRE) and optical scanning, the e-ballot can be used for counting. Voter verification, rapid recounts, public newsletters and security issues are discussed together with an attempt to design hardware software for secure remote computer voting at home.

Haijun Pan [2]: E-voting system, known as Enhanced NOTE (E-NOTE), is enhanced with a new protocol design and watchdog hardware to ensure confidentiality and voting accuracy. Apart from the Election Committee (EC) and the Vote Counting Committee (VCC), an impartial third party, the Ballot Distribution Center (BDC), is proposed to distribute ballots in our improved system. When the voters cast their votes, the votes and the names of the candidates are separated into two parts they cast their votes when the voters.

Ankit Anand [3]: The process to create and manage voting and election details, as all users must login by user name and password and click on their favourable candidates to register voting. All the user has to do is login and click on his candidates to register his vote.

Olaniyi O M [4]: The author has developed a solid crystological model for secure electronic voting. The performance analysis was carried out in accordance with the extent to which the model meets the general and functional requirements of the secure e-voting system: authentication, integrity, confidentiality and verification using exploratory factor analysis, multiple correlations and non-parametric inferential test statistics.

Manik Hapsara [5]: Reflecting on the case of the Indonesian e-voting initiative, to examine the motives behind e-government adoption by the local government. Qualitative data were collected from five government leaders at municipal and village levels in a municipality that previously held e-voting elections in the village.

Shalini Shukla [6]: Votes are still being carried out at voting booths physically. This process does not guarantee safety and manipulation cases have been observed. The author used blockchain for security to solve this problem. Blockchain uses encryption and hashing to safeguard every vote. One vote is considered to be a transaction in this case. A peer to peer network is created to create a private blockchain which shares this distributed book with a voting transaction.

Faaiz Ahmad [7]: The mobile voting system shall enable the elector to register for online voting by using the Internet from anywhere and cast his / her vote and view the results. This SRS covers the MOBILE VOTING SYSTEM with both software and hardware requirements as well as the system's basic features.

Conclusion

In this paper, we introduced a blockchain-based electronic voting system that uses intelligent contracts to secure and cost-effective elections while guaranteeing the privacy of voters.
We have shown that blockchain technology offers a new opportunity to overcome the constraints and barriers to the adoption of electronic voting systems that guarantee the security and integrity of elections and lay the foundation for transparency. Using an Ethereum private blockchain, hundreds of transactions per second can be sent to the blockchain using every aspect of the intelligent contract to facilitate the load on the blockchain.

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